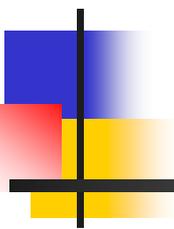


Modifiable Environmental and Behavioral Determinants of Overweight among Children and Adolescents

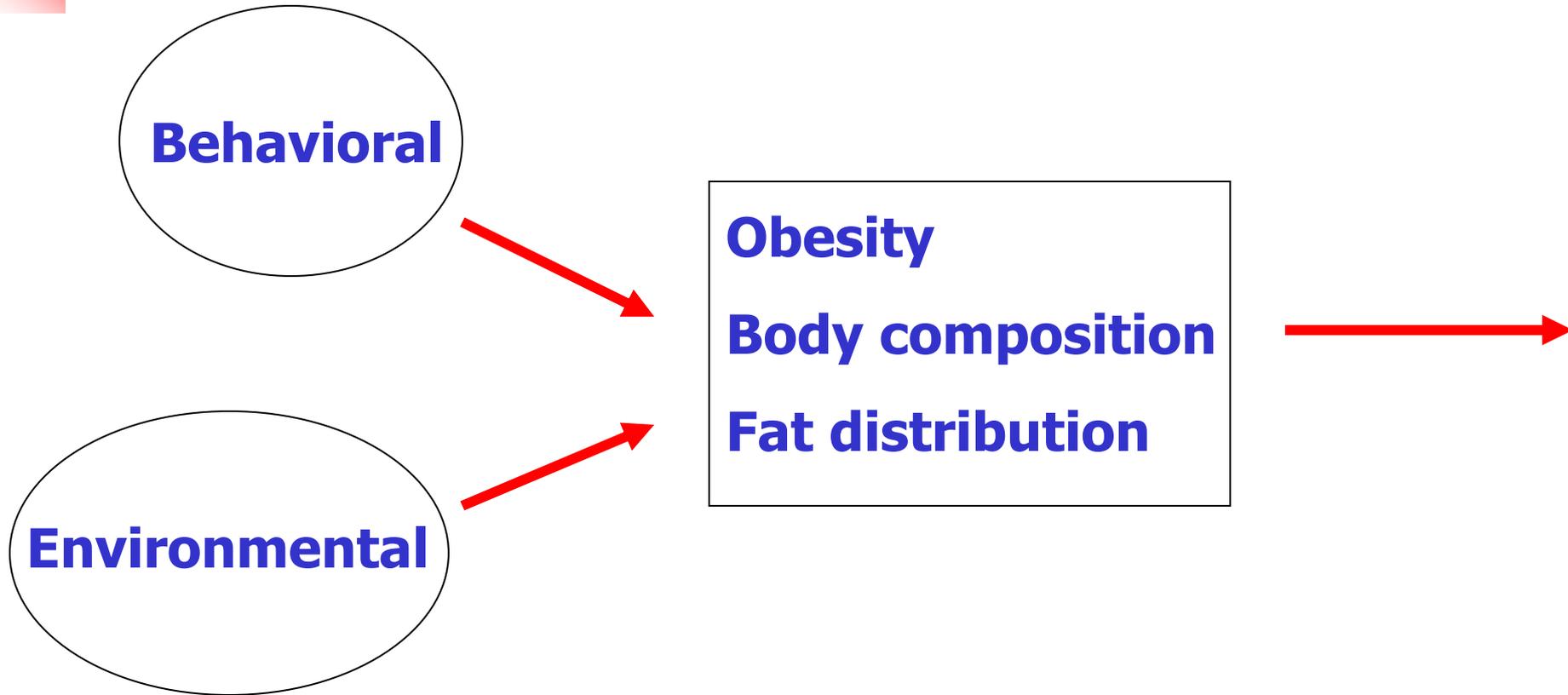


Overweight-related health measures

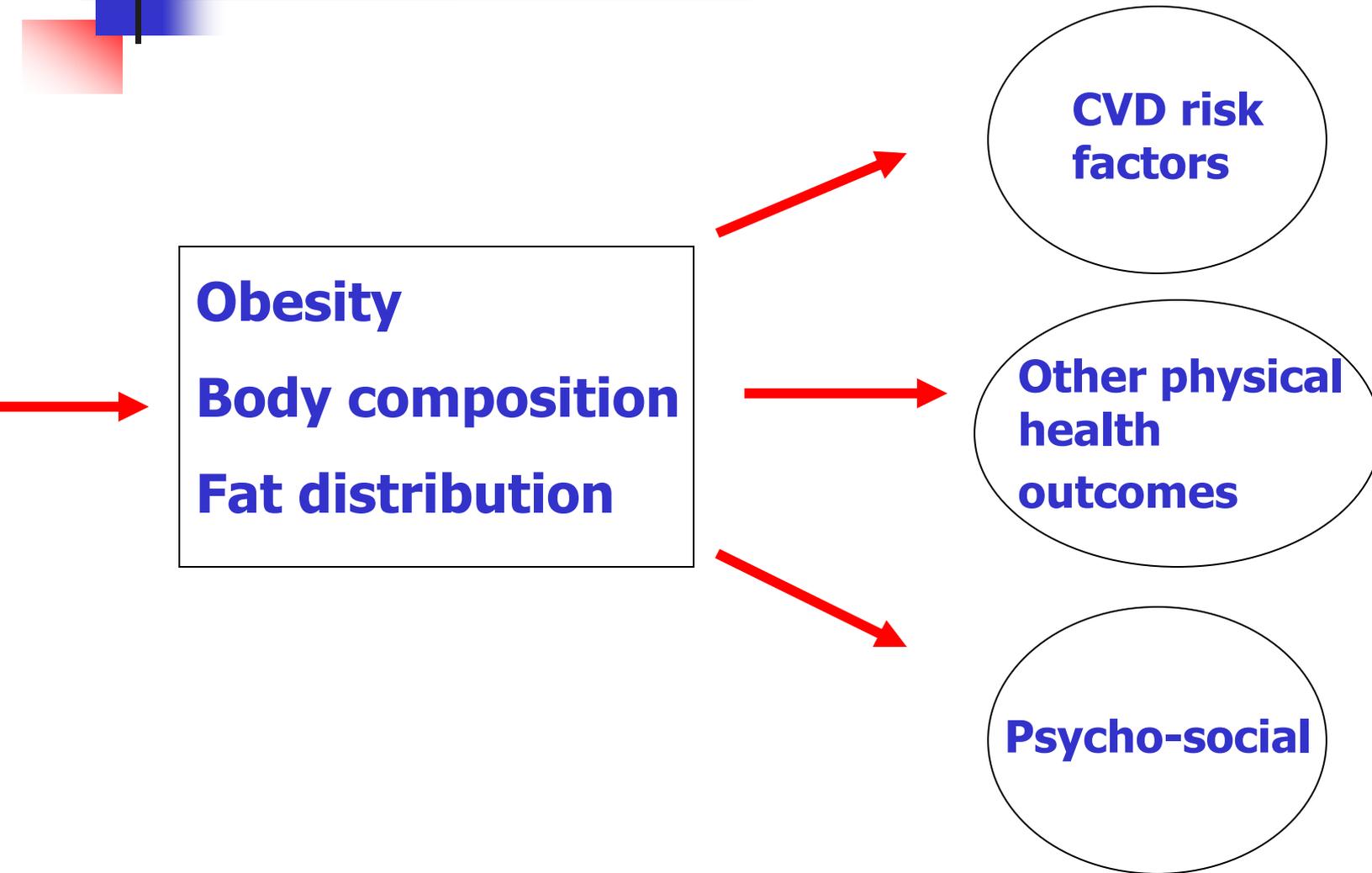
Aviva Must, Ph.D.
Tufts School of Medicine

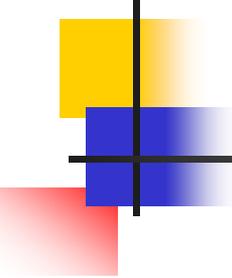
June 22 – 23, 2004
Washington, DC

Why study health outcomes?



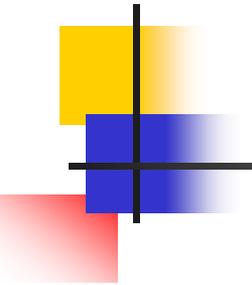
Why study health outcomes?





Why study health outcomes?

- For advocacy
- For tertiary prevention
- As additional outcomes in observational and experimental studies

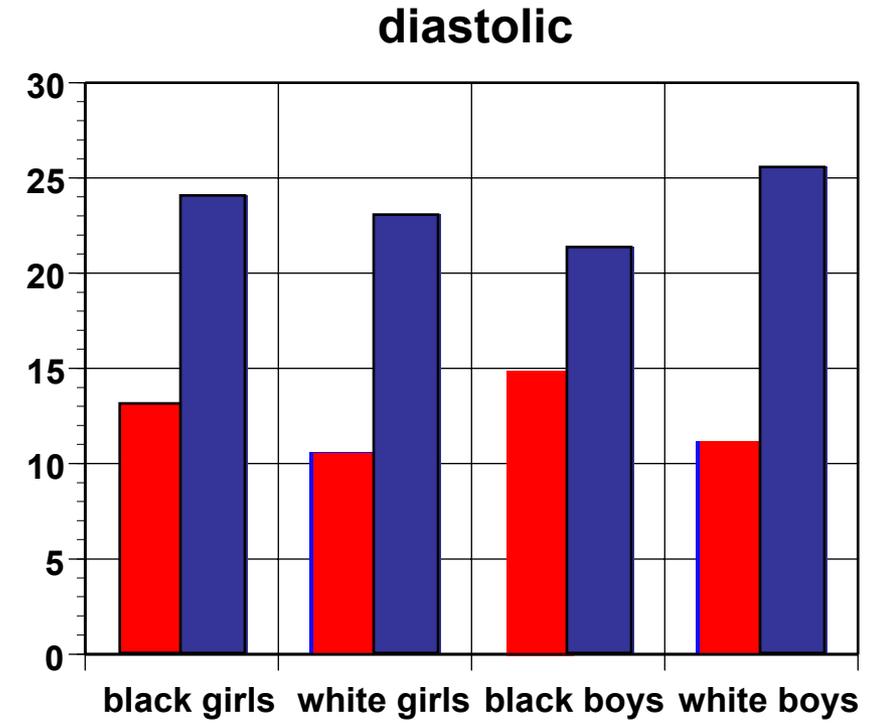
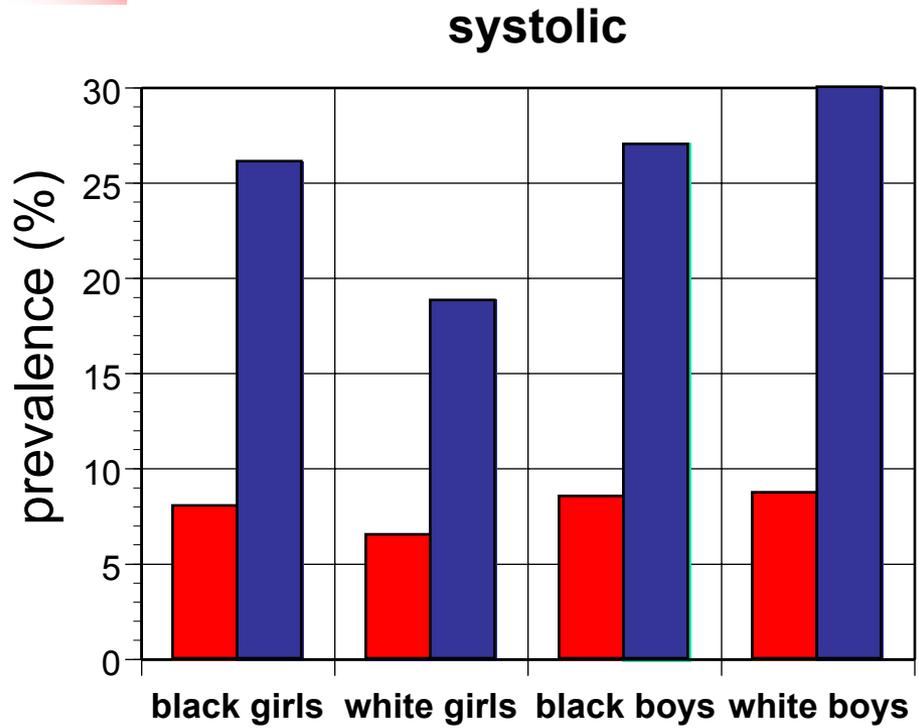


Health consequences

Physical consequences during childhood

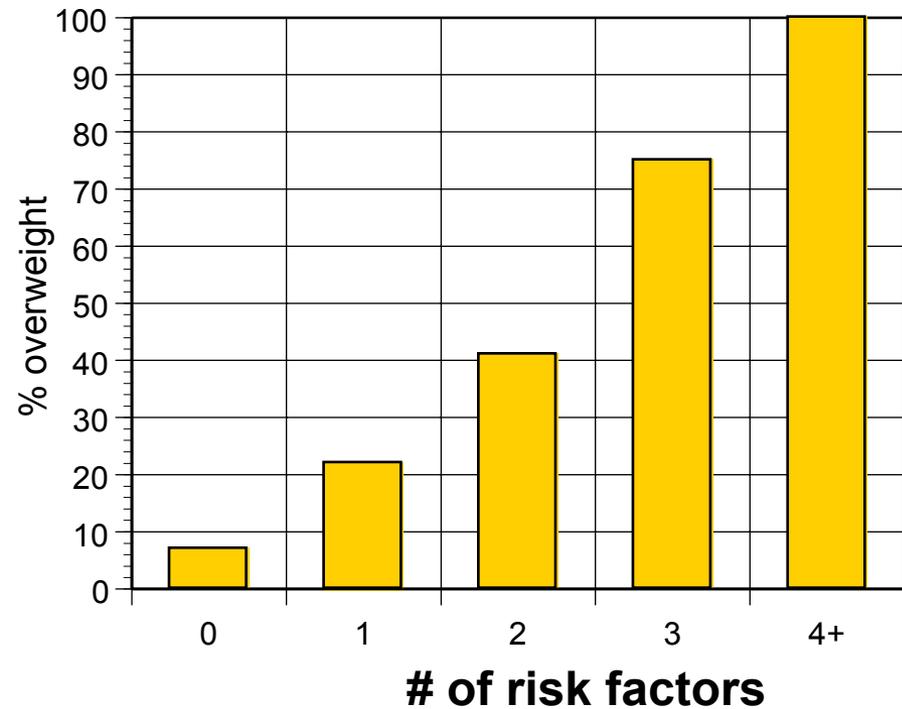
- hypertension
- elevated blood glucose/type 2 diabetes
- dyslipidemia
- metabolic syndrome
- gallstones
- polycystic ovary syndrome
- sleep apnea
- asthma?
- orthopedic conditions

Elevated blood pressure & overweight

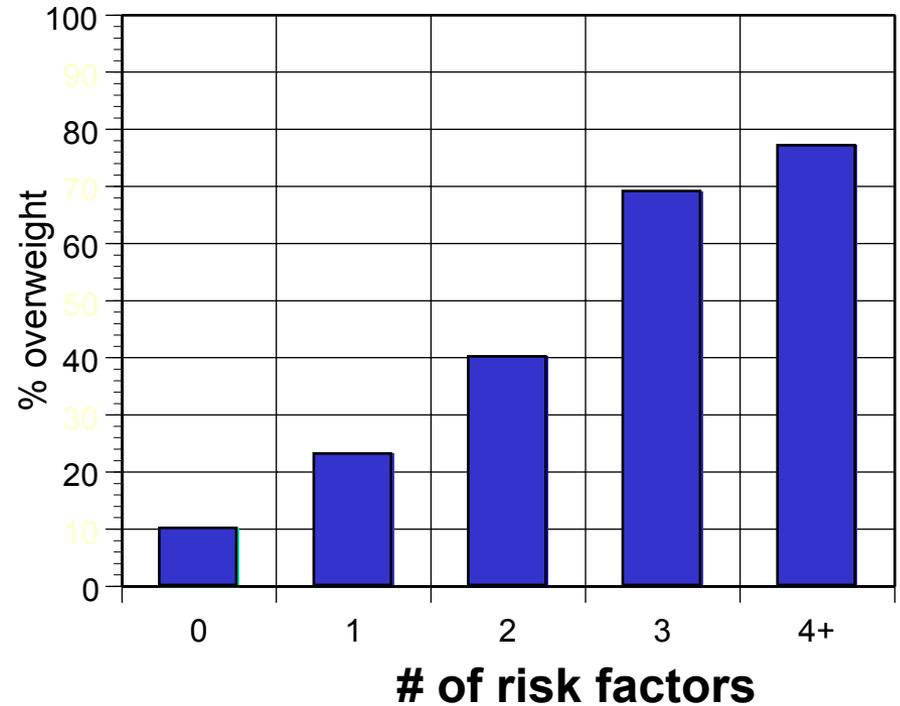


of adverse risk factors in relation to overweight: Bogalusa Heart Study

5-10 years



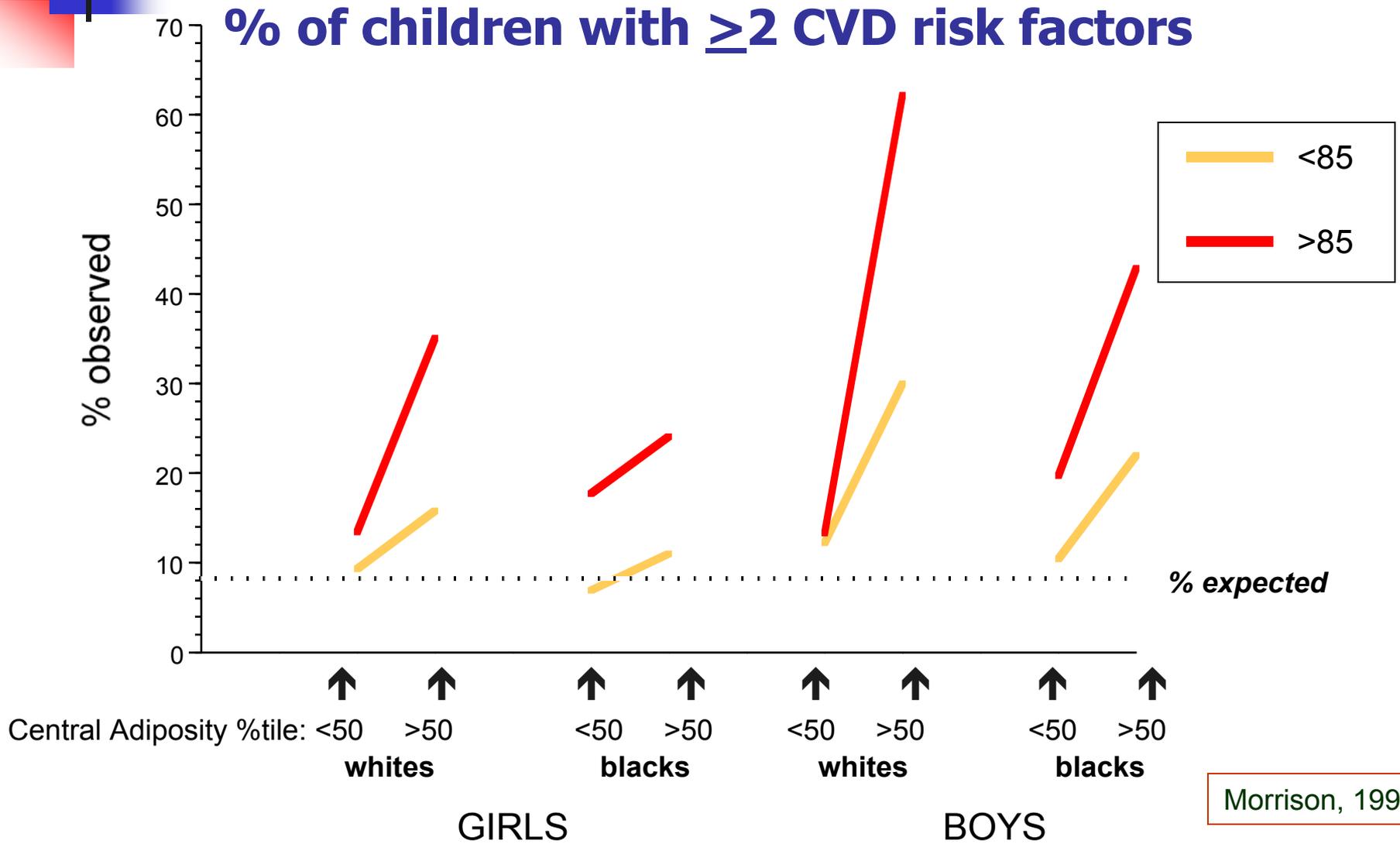
11-17 years



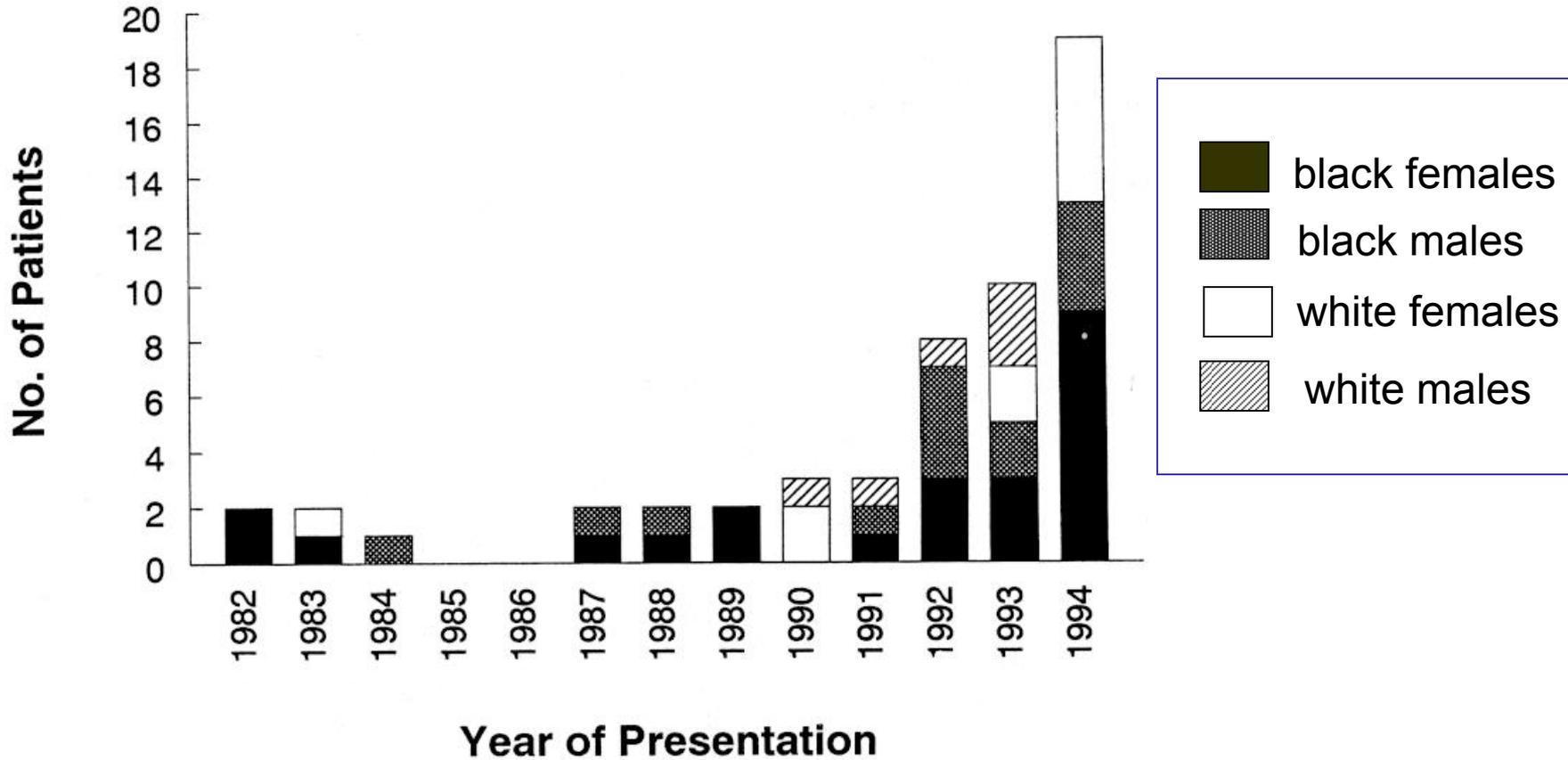
5 RFs: elevated TG, LDL, insulin, or BP; low HDL

Freedman, Pediatrics 1999

Overweight and central adiposity



Race and gender distribution of newly diagnosed pediatric type 2 by year: CCHMC



Prevalence of Metabolic Syndrome in Adolescents (NHANES III)

Table 1. Criteria for the Metabolic Syndrome*

Criterion	Adults	Adolescents
High triglyceride level, mg/dL	≥150	≥110
Low HDL-C level, mg/dL		
Males	<40	≤40
Females	<50	≤40
Abdominal obesity, waist circumference, cm		
Males	>102	≥90th Percentile
Females	>88	≥90th Percentile
High fasting glucose level, mg/dL	≥110	≥110
High blood pressure, mm Hg	≥130/85	≥90th Percentile

Abbreviation: HDL-C, high-density lipoprotein cholesterol.

SI conversion factors: To convert triglycerides to millimoles per liter, multiply by 0.01129; HDL-C to millimoles per liter, multiply by 0.02586; glucose to millimoles per liter, multiply by 0.05551.

*For definitions of criteria, see the "Definitions" subsection of the "Methods" section.

Prevalence (%)

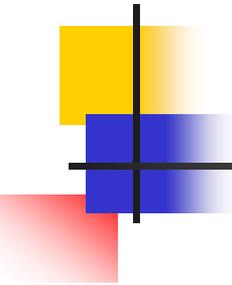
Boys: 6.1

Girls: 2.1

<85th BMI 0.1

85th-95th 6.8

>95th BMI 28.7

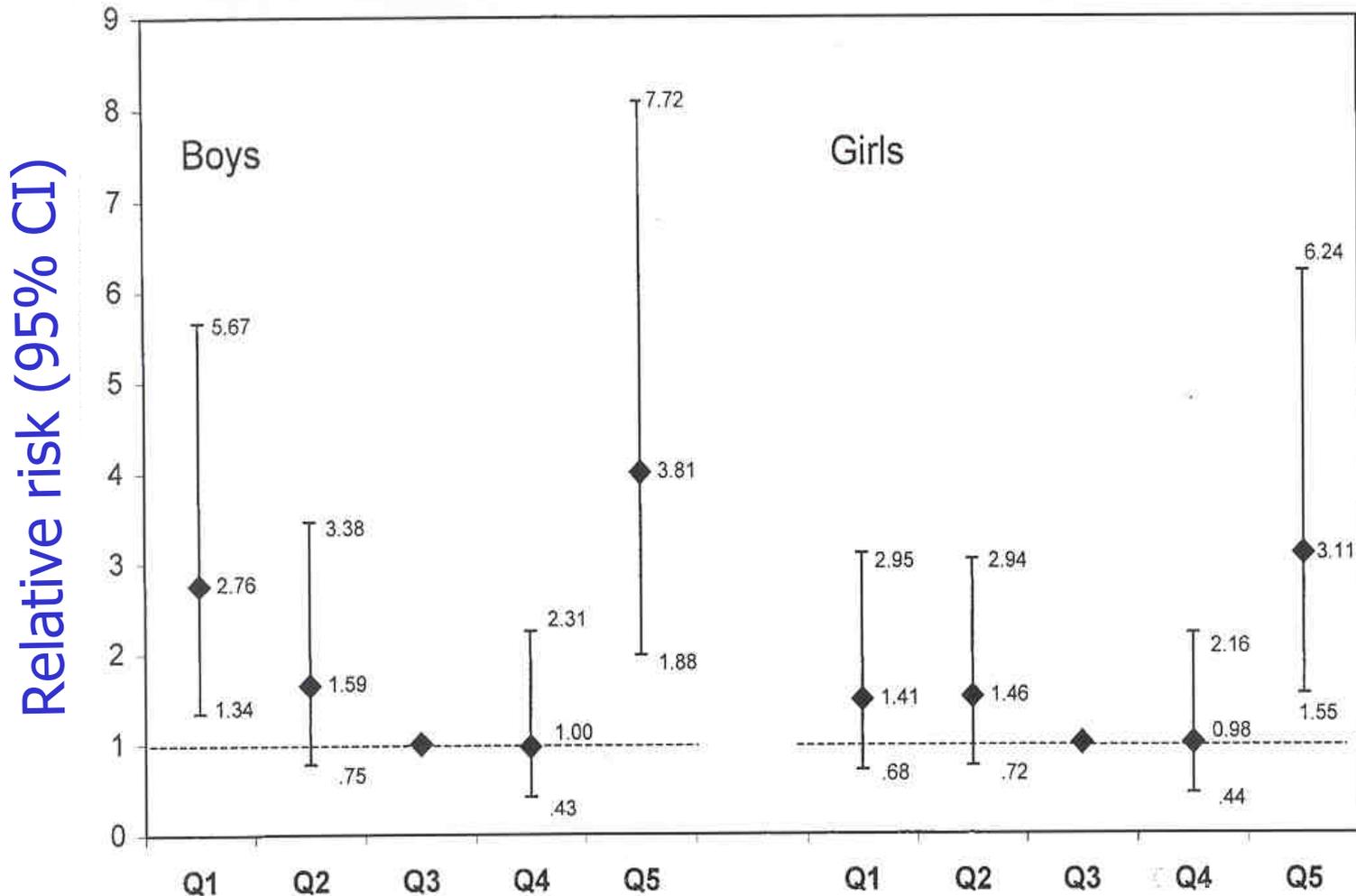


Elevated* C-reactive protein

BMI %tile	Age-adjusted OR (95%CI)
<15	1.5 (0.8, 2.7)
15 th -85 th	1.0 (referent)
85-95 th	2.3 (1.4, 3.8)
>95 th	6.2 (4.4, 8.9)

*>2.1 mg/L

Risk of incident asthma with persistent wheeze by quintile of BMI z-score change



Quintile of annual change in BMI z-score

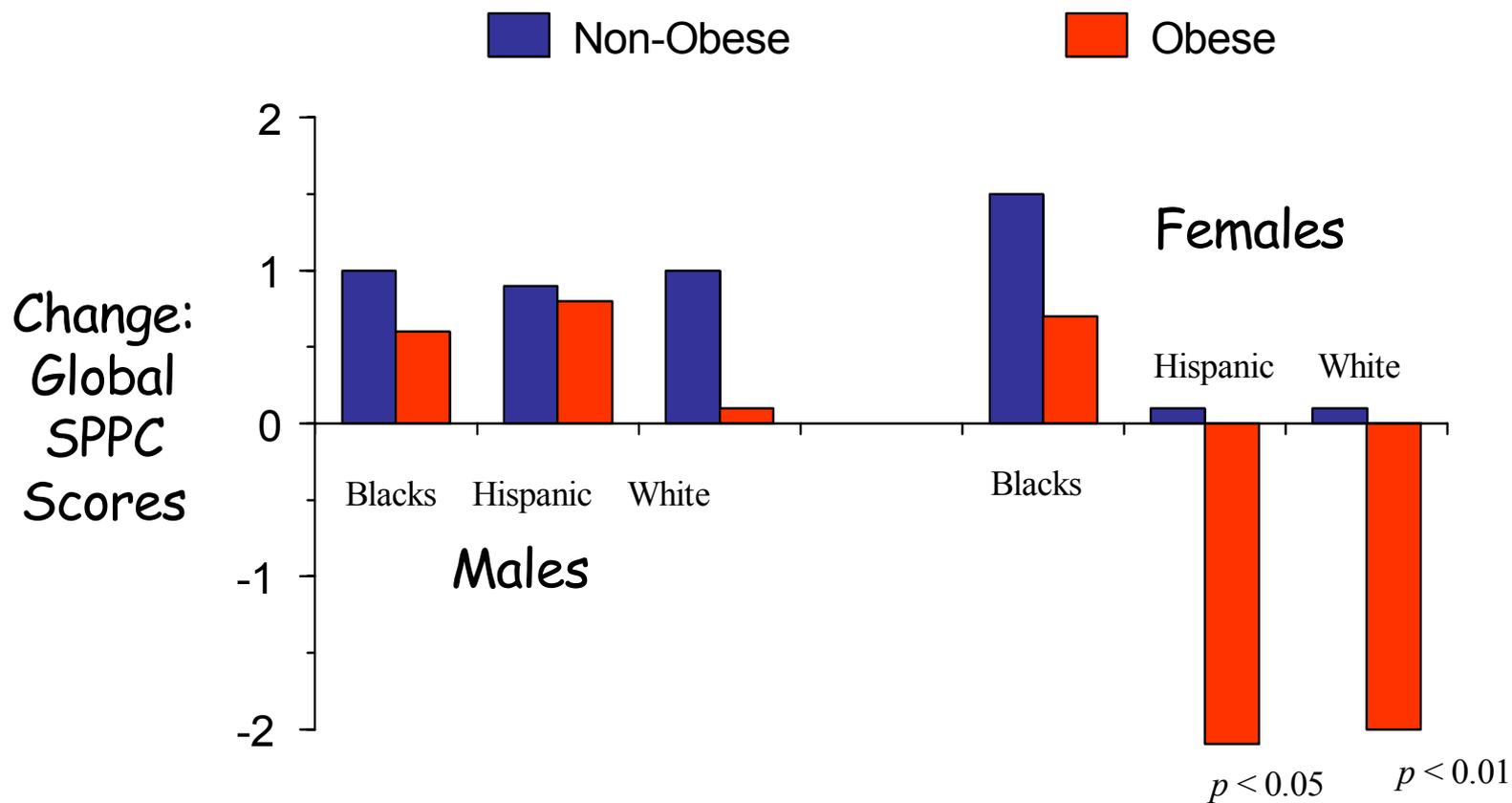
Health consequences

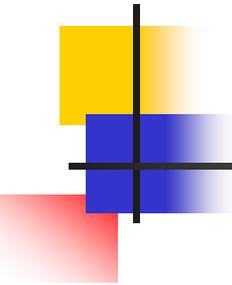
most prevalent: psychological consequences during childhood

- Self-esteem
- Social acceptance
- Depression?



Change in global self-esteem scores: 9-10 y to 13-14 y (NLSY)





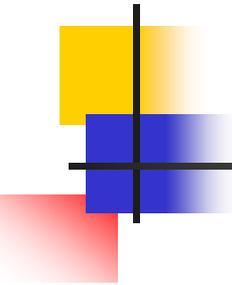
Victimization by peers

Canadian WHO Health Behavior in School-aged Children Survey

	Odds ratio for Obese Youth*	
	<i>Males (n=2718)</i>	<i>Females (n=3031)</i>
Ever	1.4 (0.9, 2.0)	1.9 (1.1, 3.4)
≥2-3 times/mo	1.3 (0.7, 2.4)	2.9 (1.5, 5.3)
≥1 time/ week	1.8 (0.9, 3.4)	2.4 (1.2, 5.1)

* Normal weight is referent group

Janssen 2004



Quality of Life: obese vs. healthy

odds ratio (95%CI)

Child report

Physical 5.0 (3.1, 8.1)

Emotional 4.3 (2.7, 6.8)

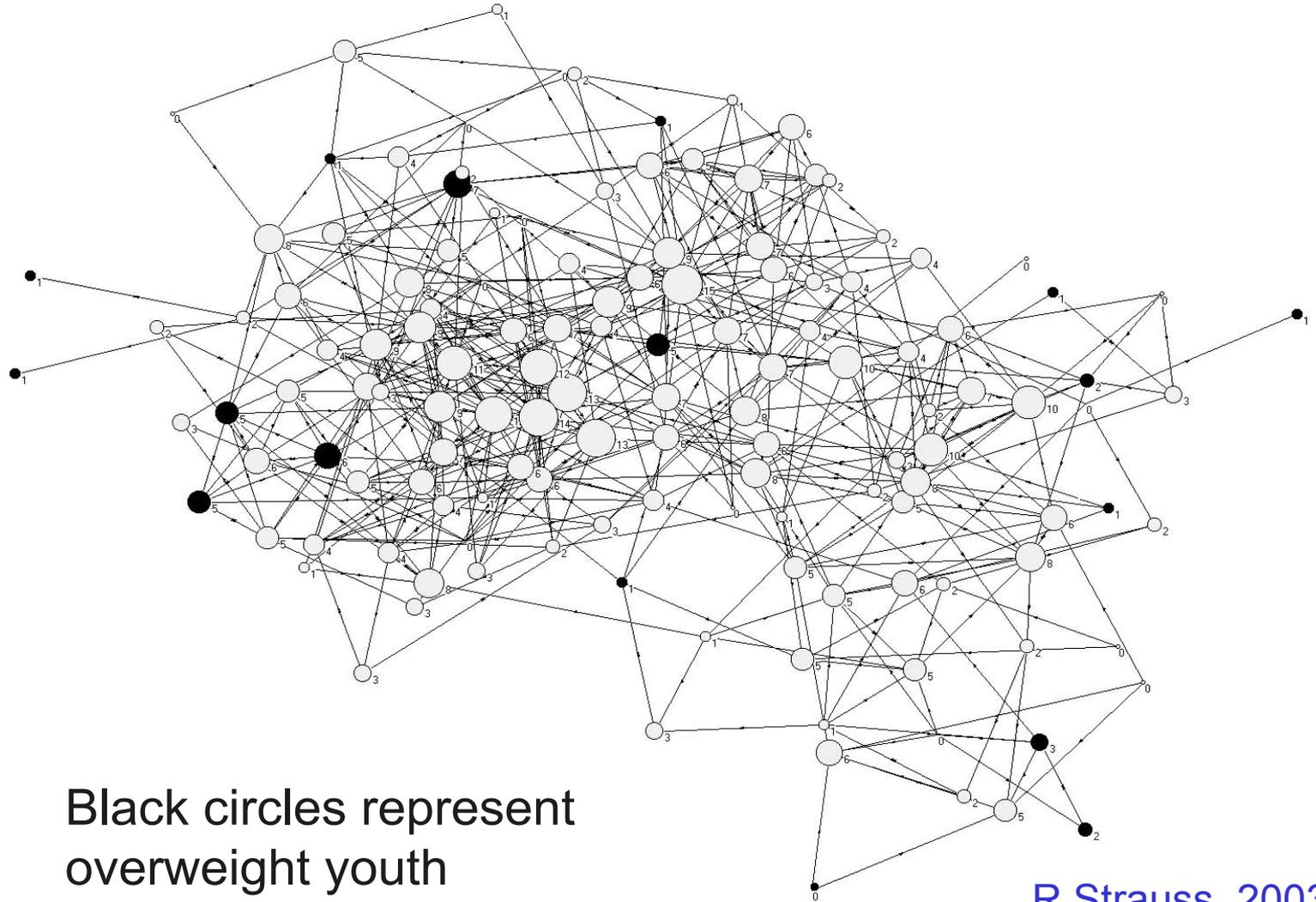
Social 5.3 (3.4, 8.5)

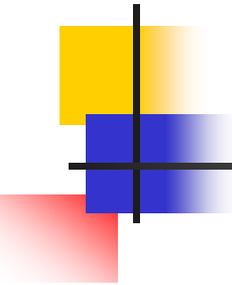
School 4.0 (2.0, 6.5)

Parent report

Total score 6.0 (3.8, 9.6)

Social Networks

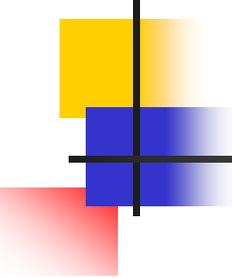




Health outcomes:

Measurement issues

- Relatively low prevalence/incidence of many obesity-related complications
- Duration of follow-up needed may be prohibitive
- Participant burden: time, invasiveness, research ethics



Wish list

- Measures of psycho-social functioning
- Fasting blood-based cardiovascular risk factor levels
- Oral glucose tolerance test
- Blood pressure
- Stored fasting blood sample
- Stored sample for future genotype screening



FINAL SLIDE!!!



*“I need someone well versed in the art of torture---
do you know PowerPoint?”*